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ABSTRACT

This learning activity package on blood pressure is one of a series of 12 titles developed for use in health occupations education programs. Materials in the package include objectives, list of materials needed, a list of definitions, information sheets, reviews (self evaluations) of portions of the content, and answers to reviews. These topics are covered: measuring blood pressure, instruments needed, and reading the gauge. (YLB)

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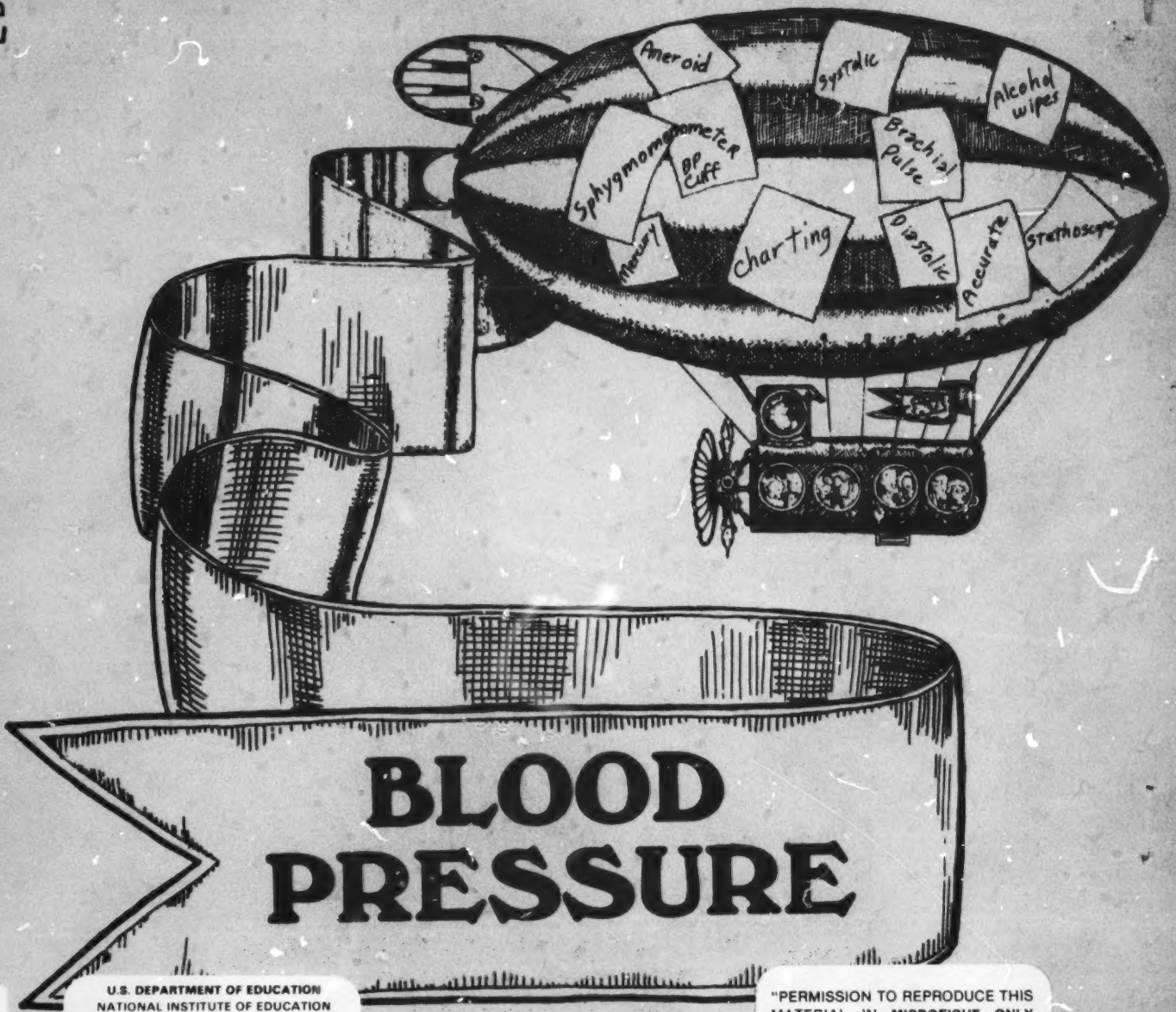
LAP Learning Activity Package



BLOOD PRESSURE

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BLOOD PRESSURE

PREPARED BY
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1982

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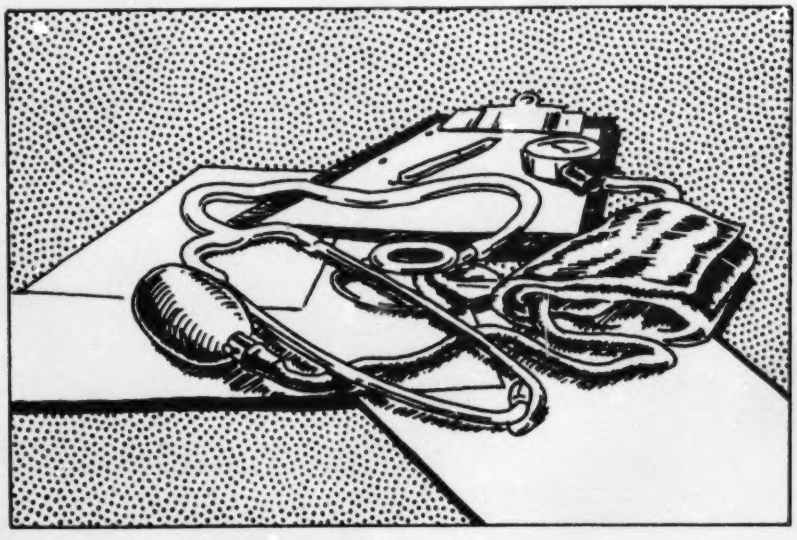
AFTER YOU COMPLETE THIS LAP, YOU WILL BE ABLE TO DO THE FOLLOWING:

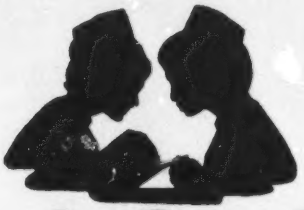
1. DEFINE SYSTOLIC AND DIASTOLIC BLOOD PRESSURE.
2. LIST FOUR FACTORS WHICH CAN INCREASE BLOOD PRESSURE.
3. LIST FOUR FACTORS WHICH CAN DECREASE BLOOD PRESSURE.
4. NAME TWO TYPES OF SPHYGMOMANOMETERS.
5. DEMONSTRATE THE CORRECT PROCEDURE FOR TAKING AND RECORDING A BLOOD PRESSURE.

MATERIALS NEEDED:

WORK SHEET*
PENCIL OR PEN
PAPER
STETHOSCOPE
SPHYGMOMANOMETER
ALCOHOL SPONGE



*BEFORE BEGINNING THE LAP, PICK UP THE WORK SHEET FROM THE INSTRUCTOR.



Let's Get Our Heads Together.

RELATED INFORMATION

BLOOD PRESSURE IS ONE OF THE VITAL SIGNS (THE OTHER VITAL SIGNS ARE TEMPERATURE, PULSE, AND RESPIRATION).

DEFINITION: BLOOD PRESSURE IS THE FORCE OF THE BLOOD PUSHING AGAINST THE WALLS OF THE BLOOD VESSELS.

THE SYSTOLIC PRESSURE IS THE GREATEST ▲ FORCE EXERTED ON THE WALLS OF THE ARTERY BY THE HEART, AND THE DIASTOLIC PRESSURE IS THE LEAST FORCE. ▼

BLOOD PRESSURE IS MEASURED BY MEANS OF A SPHYGMOMANOMETER AND A STETHOSCOPE.

A CERTAIN AMOUNT OF PRESSURE IS ALWAYS IN THE ARTERIES. THIS PRESSURE IS CAUSED BY THE HEART, WHICH BY PUMPING, IS CONSTANTLY FORCING BLOOD TO CIRCULATE. THE BLOOD GOES FIRST INTO THE ARTERIES AND THEN CIRCULATES THROUGH THE WHOLE BODY.

FROM HEART TO ARTERIES

BLOOD PRESSURE DEPENDS UPON THE VOLUME OF BLOOD IN THE CIRCULATORY SYSTEM, THE FORCE OF THE HEARTBEAT, AND THE CONDITION OF THE ARTERIES. ARTERIES WHICH HAVE LOST THEIR ELASTICITY (BECOME HARD) WILL GIVE MORE RESISTANCE AND, HENCE, THE PRESSURE WILL BE GREATER.

THE AVERAGE NORMAL BLOOD PRESSURE FOR ADULTS IS 120/80. TO DETERMINE ABNORMAL BLOOD PRESSURE, REFER TO THE PATIENT'S CHART FOR PREVIOUS READINGS, AS INDIVIDUAL BLOOD PRESSURES VARY GREATLY.

BLOOD PRESSURE CAN BE INCREASED BY:

EXERCISE
EATING
STIMULANTS
EMOTIONAL DISTURBANCE
LOSS OF ELASTICITY OF ARTERIES

EMOTIONAL DISTURBANCE

EXERCISE

BLOOD PRESSURE CAN BE DECREASED BY:

FASTING
DEPRESSANTS
QUIET EMOTIONS
SHOCK
HEMORRHAGE

QUIET EMOTIONS

ANOTHER TERM YOU MAY HEAR IS PULSE PRESSURE . THE PULSE PRESSURE IS THE DIFFERENCE BETWEEN THE SYSTOLIC AND DIASTOLIC PRESSURES. FOR EXAMPLE, IF THE PATIENT'S BLOOD PRESSURE IS 120/80 THE PULSE PRESSURE IS 40.

THE TAKING OF BLOOD PRESSURE REQUIRES CONSIDERABLE PRACTICE-- "PRACTICE MAKES PERFECT."

MEASURING BLOOD PRESSURE

AN INSTRUMENT CALLED A SPHYGMOMANOMETER IS USED TO MEASURE A PATIENT'S BLOOD PRESSURE. THE WORD SPHYGMOMANOMETER IS A COMBINATION OF THREE GREEK WORDS:

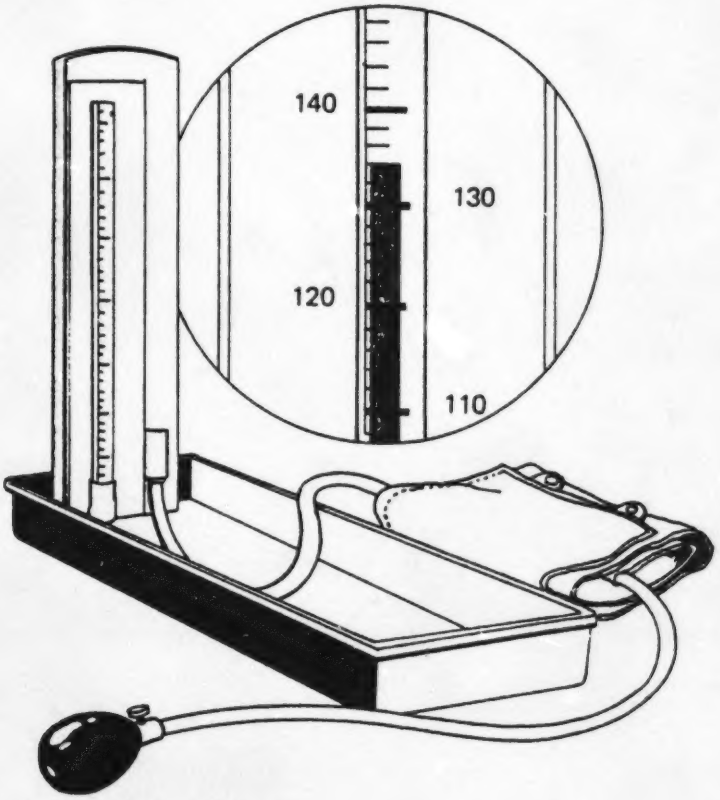
SPHYGMO, REFERRING TO PULSE
MANO, REFERRING TO PRESSURE
METER, REFERRING TO MEASURE

HOWEVER, THIS INSTRUMENT USUALLY IS CALLED THE "BLOOD PRESSURE APPARATUS."

TWO KINDS OF INSTRUMENTS ARE USED FOR TAKING BLOOD PRESSURE:

1. MERCURY TYPE.

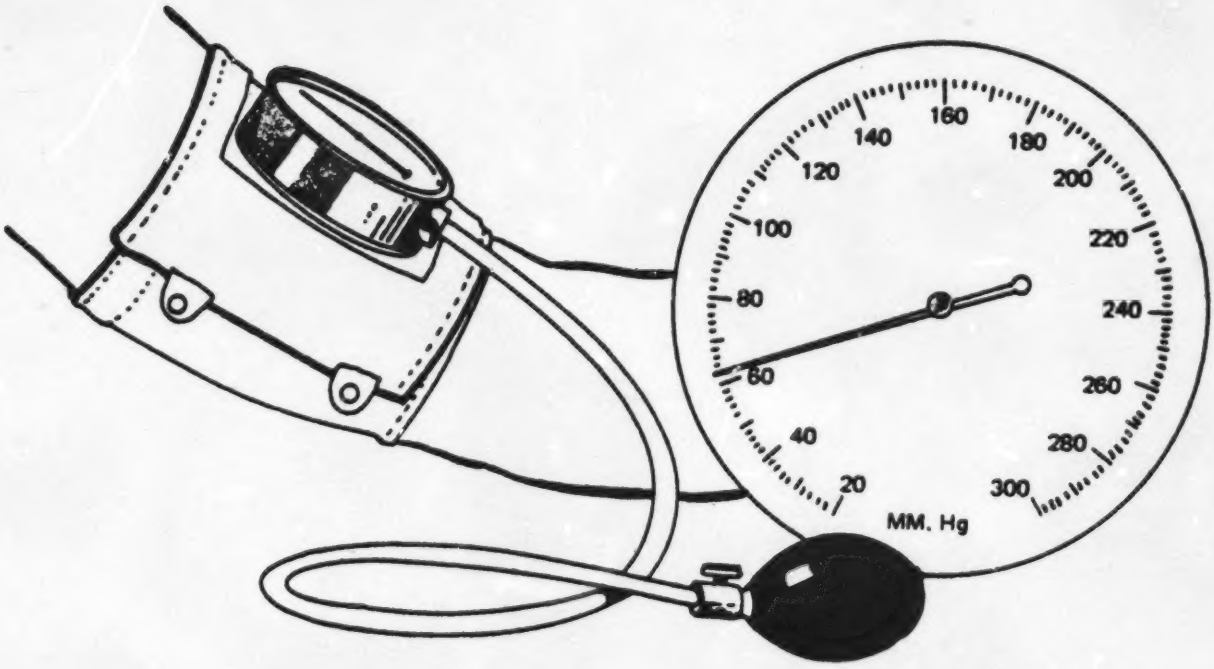
MERCURY TYPE SPHYGMOMANOMETER



MEASURING BLOOD PRESSURE (CONTINUED)

2. ANEROID TYPE

ANEROID SPHYGMOMANOMETER

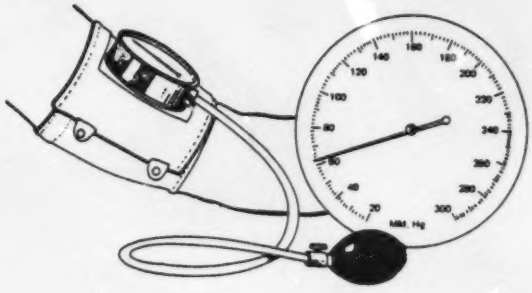


REVIEW I.

1. BOTH TYPES OF _____ HAVE AN INFLATABLE CLOTH-COVERED RUBBER BAG OR CUFF. THE CUFF IS WRAPPED AROUND THE PATIENT'S ARM, 1 TO 2 INCHES ABOVE THE ELBOW. BOTH TYPES ALSO HAVE A RUBBER BULB FOR PUMPING AIR INTO THE CUFF. THE PROCEDURE FOR MEASURING BLOOD PRESSURE IS THE SAME, EXCEPT FOR TAKING THE READING. WHEN YOU USE THE MERCURY TYPE, YOU WILL BE WATCHING THE LEVEL OF A COLUMN OF MERCURY ON A MEASURED SCALE.

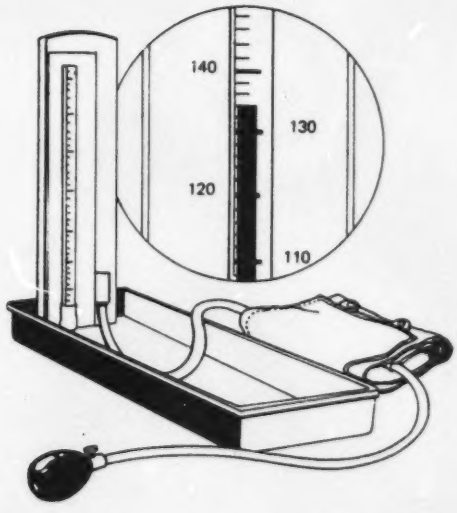
2. NAME THIS TYPE

_____



3. NAME THIS TYPE

_____



ANSWERS ON THE NEXT PAGE.

IF YOU ANSWERED ALL CORRECT, CONTINUE ON.

IF NOT, GO BACK AND REVIEW.

REVIEW I. ANSWER KEY

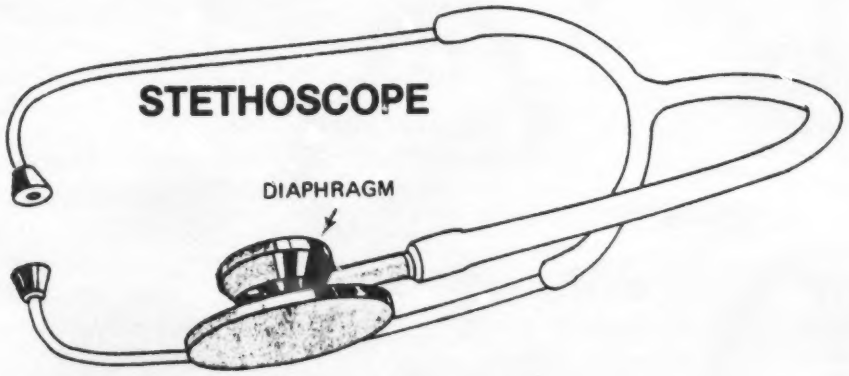
1. SPHYGMOMANOMETERS

2. MERCURY

3. ANEROID

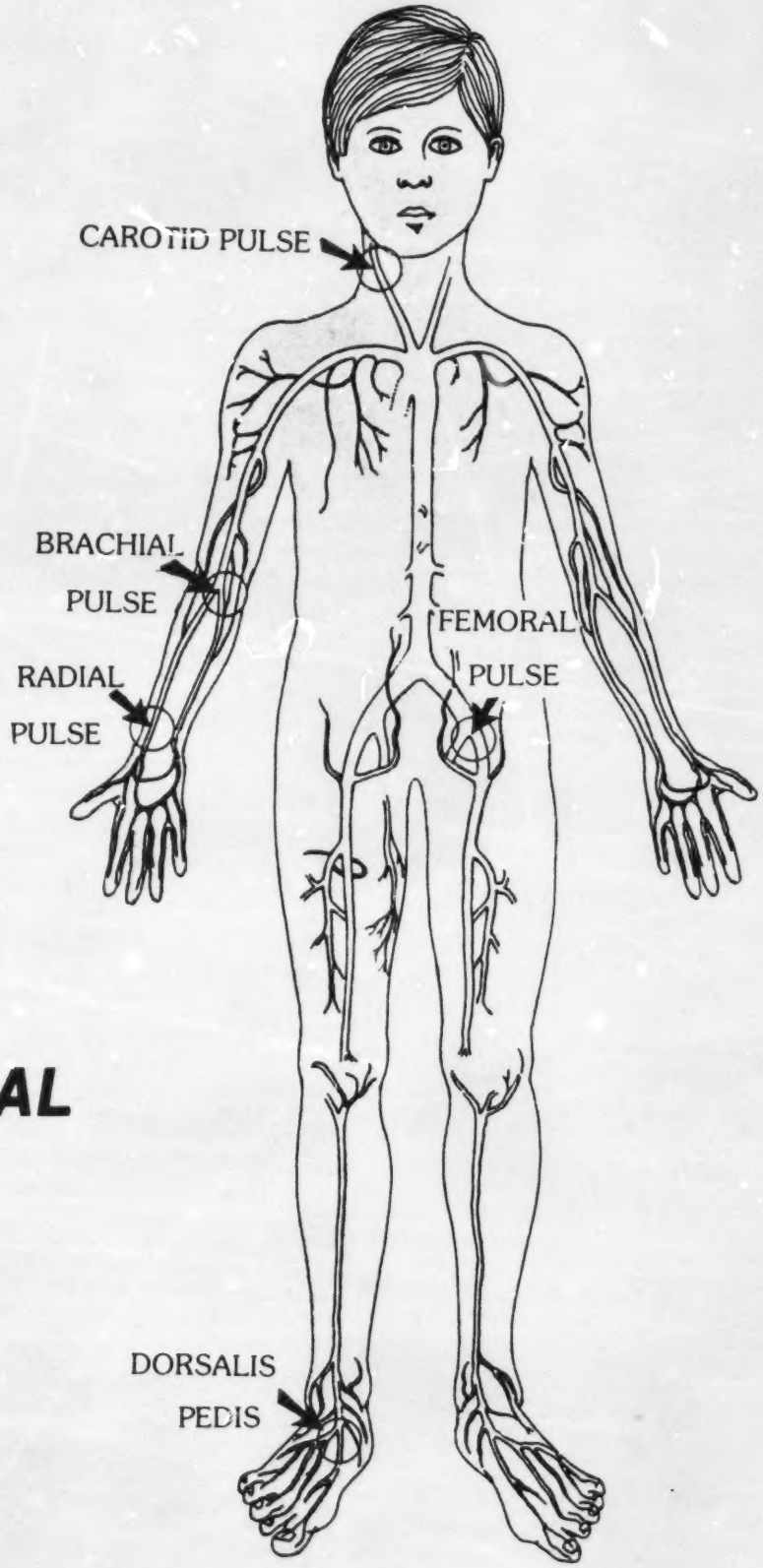
WHEN YOU TAKE A BLOOD PRESSURE, YOU WILL BE DOING TWO THINGS AT THE SAME TIME. YOU WILL BE LISTENING TO THE HEARTBEAT AS IT SOUNDS IN AN ARTERY IN THE PATIENT'S ARM. YOU WILL ALSO BE WATCHING AN INDICATOR, EITHER A COLUMN OF MERCURY OR A DIAL, IN ORDER TO TAKE A READING.

YOU WILL BE USING A STETHOSCOPE TO LISTEN TO THE HEARTBEAT. THE STETHOSCOPE IS AN INSTRUMENT THAT MAKES IT POSSIBLE TO LISTEN TO VARIOUS SOUNDS IN THE PATIENT'S BODY, SUCH AS THE HEARTBEAT OR BREATHING SOUNDS IN THE CHEST.



THE STETHOSCOPE IS A TUBE WITH ONE END THAT PICKS UP SOUND WHEN IT IS PLACED AGAINST A PART OF THE BODY. THIS END IS EITHER BELL-SHAPED (CALLED A BELL) OR ROUND AND FLAT (CALLED A DIAPHRAGM). THE OTHER END OF THE TUBE IS DIVIDED INTO TWO PARTS. THESE PARTS HAVE TIPS ON THE ENDS AND FIT INTO THE LISTENER'S EARS. ALWAYS CLEAN THE EARPIECES WITH AN ALCOHOL WIPE BEFORE STARTING.

MAJOR PRESSURE POINTS



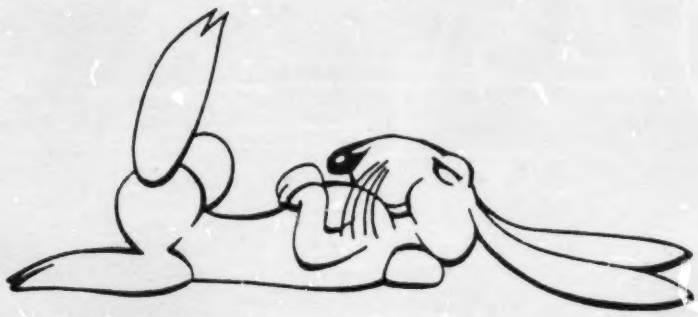
BRACHIAL

1 WASH HANDS.

2 ASSEMBLE EQUIPMENT:
STETHOSCOPE
ALCOHOL WIPE
SPHYGMOMANOMETER
PENCIL OR PEN
PAPER

3 GREET PATIENT, AND EXPLAIN PROCEDURE.

4 PATIENT MUST BE RESTING QUIETLY, LYING DOWN IN BED, OR SITTING IN A CHAIR.



5 THE ARM TO BE USED SHOULD BE WELL SUPPORTED. EXTEND THE ARM (ELBOW MUST NOT BE BENT), AND PLACE THE PALM UPWARD.

LEFT BRACHIAL ARTERY IS MORE COMMONLY USED SO THAT SUBSEQUENT READINGS WILL BE UNIFORM, BECAUSE THERE IS A SLIGHT DIFFERENCE BETWEEN THE READINGS OF THE RIGHT AND LEFT ARMS.

6 ROLL THE SLEEVE OF THE GOWN OR SHIRT WELL ABOVE THE ELBOW: IF THE SLEEVE IS TIGHT, REMOVE THE GOWN OR SHIRT.

7 WRAP THE WIDE PART OF THE CUFF (ARMBAND CONTAINING RUBBER COMPRESSION PAD) AROUND THE PATIENT'S ARM DIRECTLY OVER THE BRACHIAL ARTERY. THE LOWER EDGE OF THE CUFF SHOULD BE 1 OR 2 INCHES ABOVE THE BEND OF THE ELBOW. WRAP SMOOTHLY AND SNUGLY.

REMEMBER: LET THE AIR OUT OF THE CUFF.

8 CLEAN THE EARPIECES OF THE STETHOSCOPE WITH AN ALCOHOL WIPE.

9 WITH THE FINGERS, LOCATE THE BRACHIAL ARTERY. PLACE THE BELL OR DIAPHRAGM OF THE STETHOSCOPE DIRECTLY OVER THE ARTERY. (BRACHIAL PULSE IS LOCATED AT THE BEND OF THE ELBOW.)

10 PLACE THE ENDS OF THE STETHOSCOPE TUBES IN THE EARS. (NO SOUND WILL BE HEARD, BUT THE PULSATION WILL BE FELT WITH THE FINGERS.)

REVIEW II.

WRITE THE ANSWERS ON YOUR WORK SHEET.

1. THE BELL OR DIAPHRAGM OF THE STETHOSCOPE IS PLACED OVER THE _____ ARTERY.

2. DID YOU REMEMBER TO FEEL FOR THE _____ PULSE?

3. DO YOU HEAR ANY SOUNDS? ____ YES ____ NO.

ANSWERS ON NEXT PAGE.

IF YOU ANSWERED ALL CORRECT, GO AHEAD.

IF NOT, GO BACK AND REVIEW.

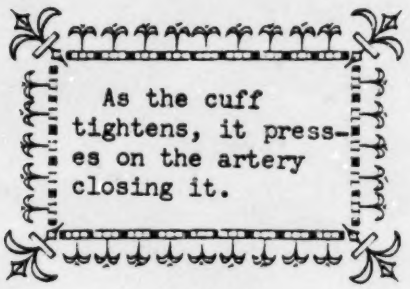
REVIEW II. ANSWER KEY

1. BRACHIAL

2. BRACHIAL

3. NO

11 CLOSE THE THUMB VALVE (TURN CLOCKWISE) THAT IS ATTACHED TO THE HAND PUMP AND INFLATE THE BALLOON UNTIL THE INDICATOR REGISTERS AT LEAST 150MM OR 20MM ABOVE WHERE THE PULSE CEASES TO BE HEARD.



KEEP THE STETHOSCOPE IN PLACE AND LISTEN. KEEP YOUR EYES ON THE POINTER OF DIAL (OR COLUMN OF MERCURY).

12 CAREFULLY OPEN THE THUMB SCREW ON THE VALVE AND LET THE AIR OUT GRADUALLY AT ABOUT 2 OR 3 MM PER SECOND.

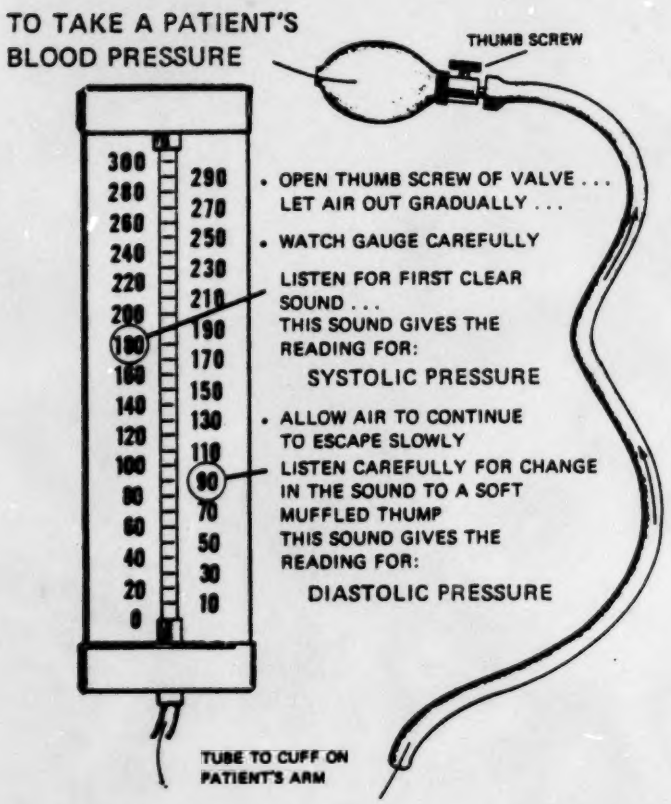
13 KEEP YOUR EYES ON THE COLUMN OF MERCURY (OR POINTER), AND LISTEN CAREFULLY FOR THE FIRST PULSING SOUND. NOTICE THE NUMBER ON THE DIAL OR MERCURY COLUMN WHEN YOU HEAR THIS SOUND. THIS IS THE SYSTOLIC PRESSURE.

14 CONTINUE TO RELEASE AIR SLOWLY OUT OF THE CUFF. LISTEN FOR A CHANGE IN THE SOUND. NOTE THE NUMBER ON THE INDICATOR AT WHICH THE SOUND CHANGES TO A DULL MUFFLED BEAT. THIS IS THE DIASTOLIC PRESSURE.

15 OPEN THE VALVE COMPLETELY, RELEASING ALL THE AIR IN THE CUFF!

Hear Ye, Hear Ye.

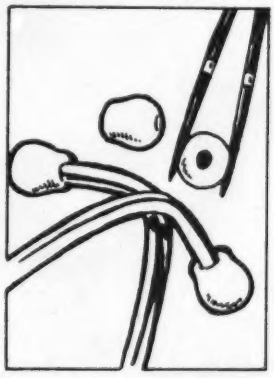
A REVIEW OF STEPS 12, 13, AND 14.



16 If you take the patient's blood pressure more than once, be sure to tell the patient you are only double-checking. You should wait approximately 15 seconds before retaking.

REPEAT STEPS 10-15.

17 Remove the cuff from the patient's arm and expel the air. Fold the cuff or roll it up, and put it in its case. Clean the earpieces of the stethoscope with the alcohol wipe. Put the equipment in the proper storage place.



18 Record: Time and Blood Pressure

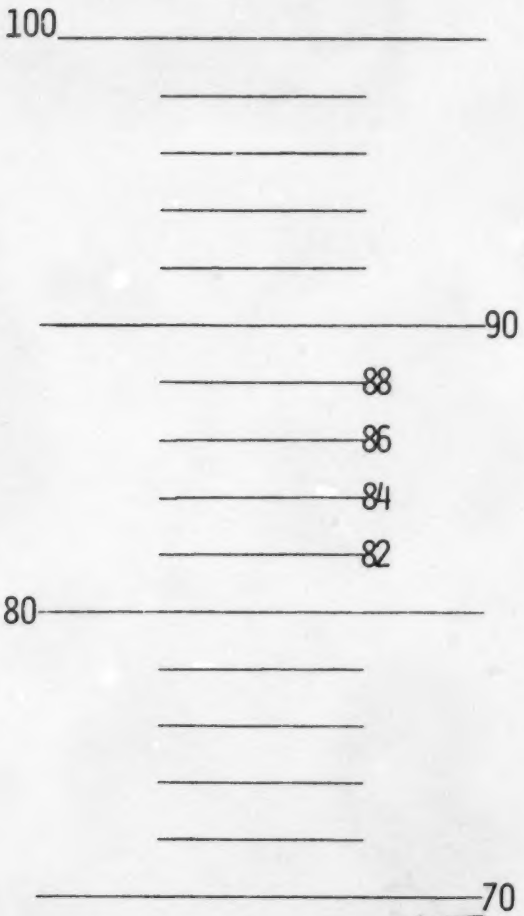
The blood pressure is recorded as a fraction. For example, 120/80 means that 120 is the systolic pressure (first sound you hear) and 80 is the diastolic pressure (change in sound).

WHEN ACTUALLY RECORDING A PATIENT'S BLOOD PRESSURE, YOU SHOULD REPORT ANY UNUSUAL CHANGE TO YOUR SUPERVISOR IMMEDIATELY.

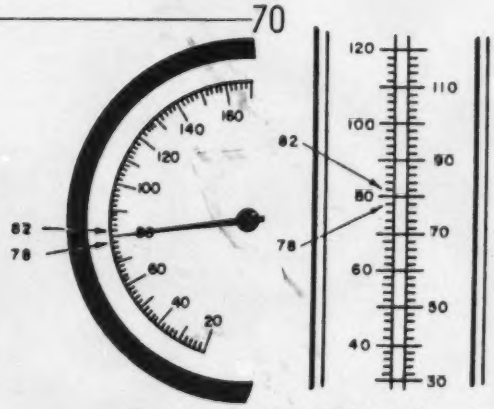
IF YOU DON'T UNDERSTAND OR HAVE ANY QUESTIONS ?

SEE YOUR INSTRUCTOR.

THE GAUGES ARE MARKED WITH A SERIES OF LARGE LINES AT 10 MM (MILLIMETER) INTERVALS. IN BETWEEN THE LARGE LINES ARE SHORTER LINES, EACH OF WHICH INDICATE 2MM.



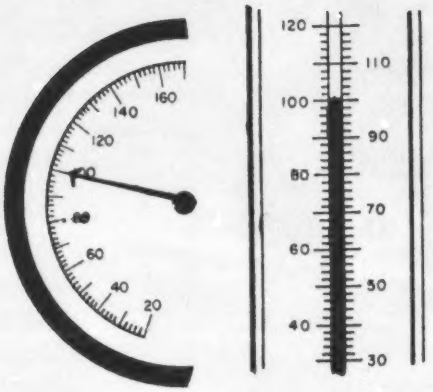
THE FIRST SMALL LINE ABOVE 80MM IS 82MM. THE SMALL LINE BELOW 80MM IS 78MM.



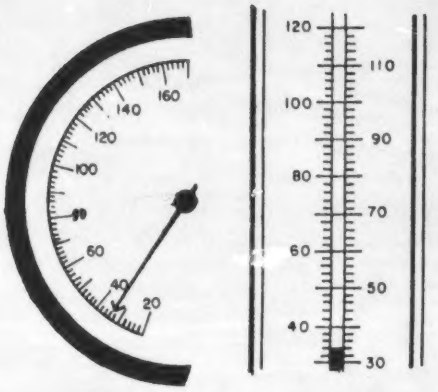
The aneroid gauge (left) and the mercury gravity gauge (right).

IN ORDER TO HAVE AN ACCURATE READING, YOU MUST KEEP THE GAUGE AT EYE LEVEL. THE MERCURY COLUMN GAUGE MUST NOT BE TILTED!

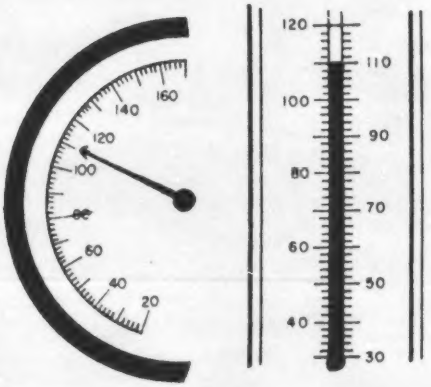
SAMPLES OF VARIOUS READINGS



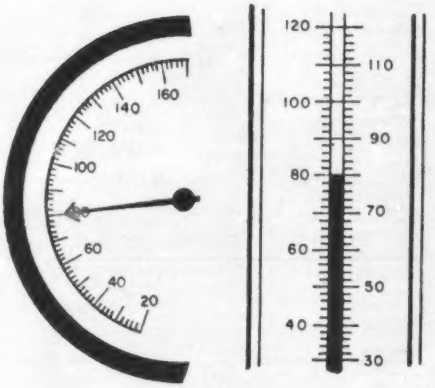
1. 100



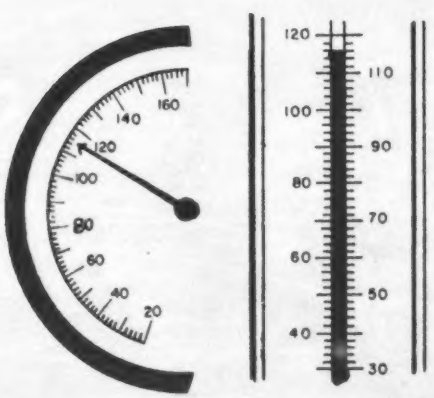
2. 34



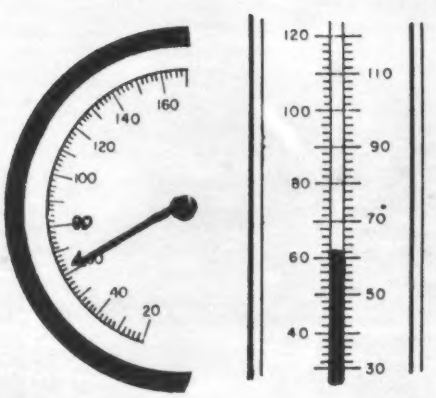
3. 110



4. 80



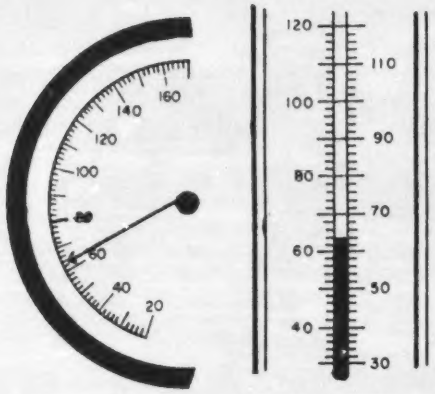
5. 116



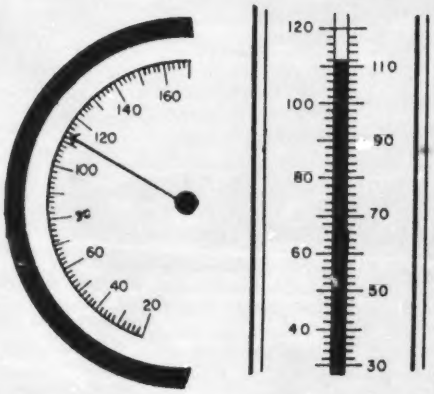
6. 62

READ THE FOLLOWING GAUGES-PUT YOUR ANSWER ON YOUR WORK SHEET.

REVIEW III.

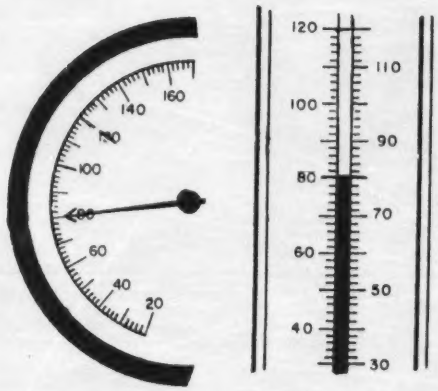


1. _____

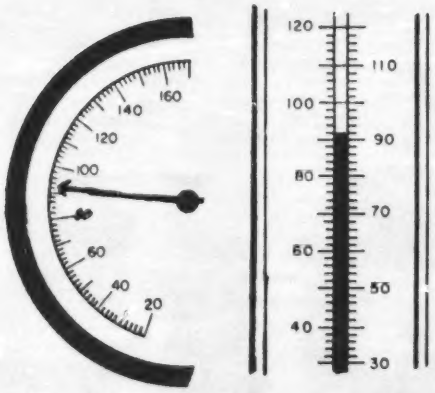


2. _____

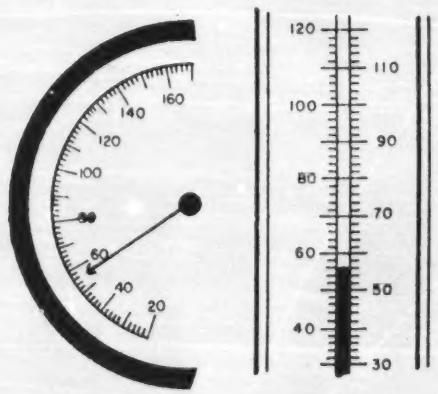
3. _____



4. _____



5. _____



6. _____

CHECK YOUR ANSWERS ON THE NEXT PAGE.

REVIEW III. ANSWER KEY

1. 64

2. 112

3. 38

4. 80

5. 92

6. 56

IF THE ANSWERS ARE INCORRECT, SEE YOUR INSTRUCTOR FOR ASSISTANCE.

REMINDER

BE SURE THE CUFF OF THE APPARATUS IS COMPLETELY DEFLATED AND THE INDICATOR REGISTERS ZERO BEFORE STARTING THE PROCEDURE.

WIPE THE EAR PIECES OF THE STETHOSCOPE WITH ALCOHOL WIPE BEFORE STARTING PROCEDURE.

AFTER HEARING THE DIASTOLIC PRESSURE, RELEASE ALL AIR FROM THE CUFF.

WHEN REPEATED READINGS ARE ORDERED, THE SAME ARM SHOULD BE USED.

IF A MERCURY-TYPE SPHYGMOMANOMETER IS USED, IT MUST BE LEVEL WHEN READING.

ACCURACY IS MOST IMPORTANT!!!!

When it's time to spread your wings...

fly on over to the instructor.

AND OBTAIN THE NEEDED EQUIPMENT TO TAKE BP'S WHICH ARE:

1. _____
2. _____
3. _____
4. _____
5. _____

PLUS PICK UP YOUR PUPIL PERFORMANCE CHECKLIST.

REVIEW IV.

WRITE YOUR ANSWERS ON YOUR WORK SHEET.

VOCABULARY: DEFINE THE FOLLOWING WORDS.

BRACHIAL	ELASTICITY
DIASTOLIC	PULSE PRESSURE
SYSTOLIC	VOLUME
STETHOSCOPE	SPHYGMOMANOMETER

QUESTIONS:

1. WHAT IS BLOOD PRESSURE?

_____

_____

_____

2. HOW IS BLOOD PRESSURE MEASURED?

_____

_____

_____

3. LIST FOUR FACTORS WHICH CAN INCREASE BLOOD PRESSURE.

A.

B.

C.

D.

4. LIST FOUR FACTORS WHICH CAN DECREASE BLOOD PRESSURE.

A.

B.

C.

D.

5. WHY IS CONTINUAL PRACTICE HELPFUL IN TAKING AND RECORDING BLOOD PRESSURE ACCURATELY? WHAT SHOULD YOU DO IF THERE IS ANY DOUBT ABOUT THE ACCURACY OF A READING?

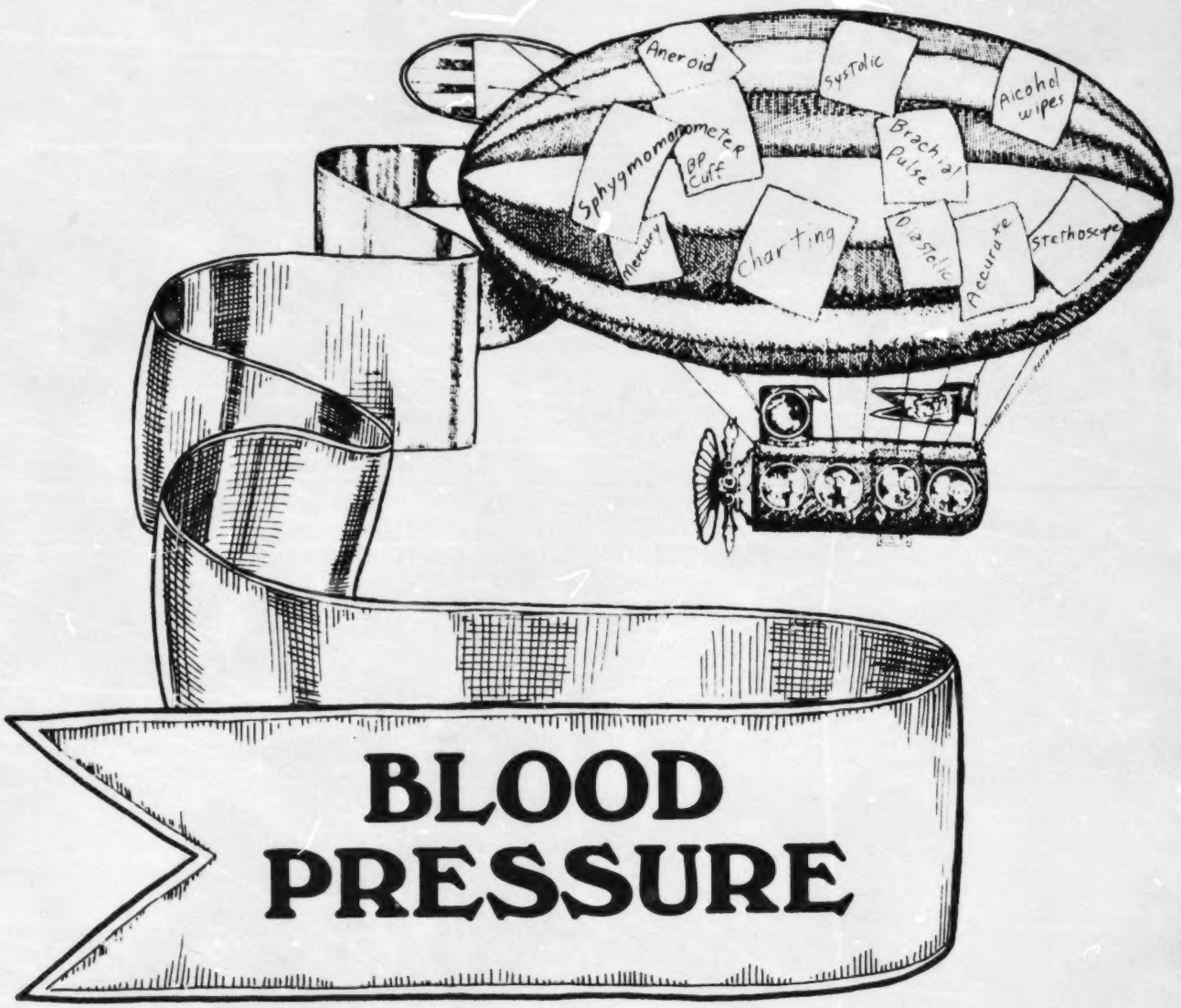
_____

_____

_____

REFER BACK TO RELATED INFORMATION FOR ANSWERS.

RETURN THIS LAP TO YOUR TEACHER WITH YOUR COMPLETED WORK SHEET AND PICK UP THE LAP REVIEW WORK SHEET.



Learning Activity Packages
Available from the Department of Education

This learning activity package is one of a series of 12 titles relating to health careers that are available from the California State Department of Education. A student packet and an instructor's packet are published in each of the following subjects:

Anaphylactic Shock
Blood Pressure
Confidentiality
Grooming
Handwashing
Metric System
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Oral Hygiene
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Surgical Scrub
Syncope
TPR (Temperature, Pulse, Respiration)

Student packets are available at $1.75 each, plus tax, and instructors' packets at $1.50 each, plus tax.

Orders should be directed to:

California State Department of Education
P.O. Box 271
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Remittance or purchase order must accompany order. Purchase orders without checks are accepted only from government agencies in California. Sales tax should be added to all orders from California purchasers.

A complete list of approximately 500 publications available from the Department may be obtained by writing to the address listed above.

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